ELEMENT 3

The process for developing Total Maximum Daily Loads, TMDLS, and individual water quality based effluent limitations for pollutants as required in section 303(d) and part 130.7

Summary *– Total Maximum Daily Loads (TMDLs) are written plans established in Section 303(d) of the Clean Water Act to ensure that a water body will attain and maintain state Water Quality Standards (WQS). The TMDL process is an integral part of the water quality-based approach to watershed management. In this element the connection between TMDLs and Section 303(d) list, the program's TMDL strategy, permit review process under TMDLs, water quality management planning and the current status of TMDL development are described.*

The TMDL process begins with the determination of which waters do not meet, or are not expected to meet, Water Quality Standards after the implementation of technology-based controls. Section 303(d) of the Clean Water Act (the Act) requires states to develop a list of all such waters, referred to as the 303(d) list. Waters identified through this process are considered water quality limited and must be prioritized so that an overall management plan can be developed to manage the pollutants. A determination is then made as to the amount of pollutants entering the water body. Once quantified limits for point sources and management practices for nonpoint sources that are protective of Water Quality Standards can be established and after these control actions are implemented, an assessment can be made to determine the effectiveness of the TMDL plan.

TMDLs are established for impairments or threats to a water body caused by identifiable pollutants as defined by the Clean Water Act. At this point TMDLs for over 24 water bodies have been submitted by the state and approved by the U.S. Environmental Protection Agency (EPA). Recent TMDL activity is available on the department's Web site.

TMDLs and Public Participation

The public information effort may not always be entirely in line with the required schedule for the program's formulation and implementation of the Total Maximum Daily Load (TMDL) Development plans for impaired water bodies. Every effort is made to develop TMDLs and solicit public participation early in the process.

In the assessment and evaluation of data, the department uses information from water quality monitoring in the program's planning section. The department includes information from the Land Reclamation Program, Public Drinking Water Program, Hazardous Waste Program, Solid Waste Management Program, Environmental Services Program, Geological Survey and Resource Assessment Division and regional offices. Also utilized are the Missouri Department of Conservation, the Missouri Department of Agriculture, the Missouri Department of Health, the University of Missouri as well as other respected sources.

The TMDL Policy Advisory Committee group serves in an advisory capacity to the department. Meetings are opened to the public. The TMDL advisory committee meets the third Tuesday of the month. The participants set the meeting dates. Meetings provide a mechanism for representatives of stakeholders to obtain accurate information on TMDL issues and assist with dissemination of information to their constituents. Contact the department for a list of TMDL policy advisory committee participants.

When appropriate, public meetings are held prior to TMDL development. Public meeting agendas are announced through press releases, print, radio and T.V., etc. Efforts are made to include appropriate stakeholders with presentation of relevant TMDL information for specific watersheds.

All TMDLs in Missouri have a public notice period. This 30-day notice provides an opportunity for the public to comment on proposed implementation plans. All public notices are mailed to the interested parties on a current listing maintained by the department. These notices are posted on the department's Web site and in newspapers. The department sends public notices on nonpoint source TMDLs to Stream Teams in the affected watershed and all known stakeholders.

Each of the nonpoint source impaired waters presents a unique challenge for restoration and staff work through the appropriate processes and organizations that are relevant to each problem.

Public Participation and the 303(d) Listing Process

Public participation is part of the 303(d) listing process for impaired waters. This process lists waters the department has determined do not meet Water Quality Standards and is the basis for Total Maximum Daily Load Development. In generating the 1998 303(d) lists, several 30-day public notice periods were provided. These public notices requested input on identified impaired waters, along with supporting data. They were widely disseminated to regulated entities, interested groups and individuals. The public comment period is advertised in newspapers around the state. Information is posted on the Department of Natural Resources Web site and links to this site were available on the Stream Team Home Page and on the Missouri Water Information Network. In addition to the notice for the 1998 303(d) list, a series of meetings were held in each of the department's regions (Southwest, Southeast, Northeast, Central, St. Louis and Kansas City regional offices). These meetings were held between Aug. 18 and Sept. 22, 1999, and were advertised via the department Web site and through notices in local newspapers. Furthermore, the Missouri Clean Water Commission conducted a public hearing on the 303(d) list, where direct testimony was given. After responding to all comments received together with appropriate changes to the list, a final 30-day public comment period was held before the Missouri Clean Water Commission. The 2002 303(d) Impaired Waters List is being prepared for public notice in 2001.

TMDL Development

Total Maximum Daily Loads are written plans and analyses established to ensure that the water body will maintain Water Quality Standards based on existing or designated use, numeric and narrative criteria and antidegradation requirements as defined in the Clean Water Act.

Missouri's Water Quality Standards, and Missouri's 303(d) list are the basis for Total Maximum Daily Loads (TMDLs). Impaired waters placed on the 303(d) list are required to have written TMDL plans.

Section 303(d) of the Clean Water Act requires the listing of all impaired waters that do not meet applicable Water Quality Standards once all conventional water pollution control practices are in place in the watershed. Water Quality Standards are not met when beneficial uses are not sustained or achieved. The Act requires states to calculate the Total Maximum Daily Loads (TMDLs) permissible for each of these impaired waters. Thus Section 303(d) acts as an oversight clause within the Clean Water Act, (most recently amended in 1992), to provide the needed level of protection to waters not adequately protected by other portions of the Act or other state or federal laws.

The Section 303(d) list is compiled from September through November of every odd numbered year when all available water quality data with acceptable quality assurance is reviewed for compliance with Water Quality Standards by the department's Water Pollution Control Program. The Section 303(d) list is a subset of the waters reported in the 305(b) data. The 1998 Missouri 303(d) serves as a baseline for future measures and contains certain waters for which there is little data to document the problem now but for which staff believe that a significant water quality concern had been identified, making it worthy of 303(d) listing.

The TMDL lists are developed using the state Water Quality Information System database, which tracks the status of all classified waters with respect to beneficial use attainment. Waters found not to be in compliance with Water Quality Standards along with other information are compiled into a biennial state water quality report. This report, called the 305(b) Report after the section of the federal Clean Water Act requiring it, represents the most complete documentation of waters not meeting standards. It is a summary of water quality in Missouri for Congress and the public.

The 1998 Missouri 303(d) list, in deference to concerns expressed by the Federal Advisory Committee assisting the U.S. Environmental Protection Agency (EPA) in developing guidelines for implementation of Section 303(d), is composed of three categories of waters:

1) waters with sufficient data to document an impairment,
2) waters that need to have more data collected before the impairment can be determined, and
3) waters where the impairment is caused by naturally occurring conditions or by very low concentrations of man-made toxicants in water and sediments that would be extremely difficult to remediate.

All waters on the 303(d) list must have a TMDL plan written and approved. Missouri is now in the process of determining load allocations (for nonpoint sources) and waste load allocations (for point sources) for all waters on the 1998 303(d) list, approved by the Clean Water Commission. See References for 303(d) list, strategy and methodology documents.

Total Maximum Daily Load (TMDL) Plans

TMDLs are written plans and analyses established to ensure that the water body will attain and maintain Water Quality Standards (designated uses, numeric and narrative criteria and antidegradation requirements defined at 40 Code of Federal (CFR) Part 131), including consideration of reasonably foreseeable increases in pollutant loads. TMDLs must be established for water bodies on the 303(d) list of impaired waters.

The TMDL process is an element of the water quality-based approach to watershed management. It links the development and implementation of control measures to attainment of Water Quality Standards. Through the establishment and implementation of a TMDL, pollutant loadings from all sources are estimated; links are established between pollutants, sources and impacts on water quality; allowable pollutant loads are allocated to each source; and appropriate controls are established or modified so that Water Quality Standards can be achieved.

Within the TMDL is the identified allowable pollutant load. This pollutant load is the amount of a pollutant that may be contributed to a water body and still allow that water body to attain and maintain Water Quality Standards. The allowable pollutant load is equivalent to the sum of waste-load allocations for point sources, load allocations for nonpoint sources, a margin of safety sufficient to account for uncertainty and lack of knowledge and allowances for future growth.

The department's approved strategy document (also referred to as the methodology document) contains the general schedule and procedures for TMDL development. The scheduled number of TMDLs is not evenly distributed. They vary based on data collection needs and the ability to treat the impairments. The greatest numbers of TMDLs are scheduled for completion between 2003 and 2005. Collection of adequate chemical, physical and biological data to support development of TMDL documents is an ongoing process. The data must be collected and modeled. At that time, TMDL implementation and restoration plans may be developed.

Impairments that are not amenable to treatment due to agriculture and urban nonpoint sources must be addressed as TMDL implementation and restoration plans are developed. Determining the methods and models best suited to calculate load and waste-load allocations for each water body or impairment is currently in process by the department.

The department updates and posts on the web at http://www.dnr.state.mo.us/water.htm the most recent schedule for the number of TMDLs to be developed each year. The scheduled numbers of TMDLs per year are not evenly distributed. They vary based on data collection needs and the ability to treat the impairments. The greatest numbers of TMDLs are scheduled for completion between 2003 and 2005. Collection of adequate chemical, physical and biological data to support development of TMDL documents is an ongoing process.

Listing of Impaired Waters

The decision to list or delist a water as impaired depends upon a comparison between data from that water and the criteria of the Missouri Water Quality Standards. The listing process identifies conditions where existing Water Quality Standards are not supported and whether the impaired waters list is the appropriate mechanism for addressing the situations. The Water Quality

Standards identify the uses of particular waters and the data indicates whether the quality of water to support those uses is present. The process includes the addition of waters to the list, the maintenance of waters on the list or the delisting of waters from the current list. The process includes a solicitation for candidate waters followed by a review of listed or candidate waters. There are public meetings to discuss the process for the candidate water and for the development of a draft list that is placed on public notice followed by a public hearing on the proposed list. A decision by the Clean Water Commission for listing or delisting is made. EPA reviews and approves and/or disapproves these actions.

Interested parties intending to submit data coordinate with program staff to ensure data is presented in a complete and understandable manner that can be used for listing purposes. Any data submissions that describe the specific water segment, the contaminant or condition that violates Water Quality Standards, the suspected source of the contaminant or condition and any other pertinent information are considered during the open review process. Level I and Level II data are used when selecting water bodies for the 303(d) list, unless the problem can be accurately characterized by Level I data. (See Element 3 for the definitions of Levels I, II and III). Data received pertaining to the listing under 303(d) may affect activities or programs other than the 303(d) process, such as monitoring and or development of new processes or policies.

Commentators do not receive individual responses to their comments. All comments pertinent to the 303(d) list and the staff's response to them are presented to the Clean Water Commission when the 303(d) list is undergoing review.

The approved 1998 303(d) list for category 1 waters are the recommended section 303(d) waters required to have TMDLs. Category 2 waters are the recommended section 303(d) waters required to have additional monitoring prior to TMDL development. Category 3 waters are the recommended section 303(d) waters required to have use attainability analysis (i.e. physical, chemical, biological, and or economic assessment to determine factors preventing attainment of the designated use) or TMDL development. Information on the 1998 303(d) list can be found in Missouri's Nonpoint source Management Plan (NPSMP), which was approved by EPA in 2000 and is on the Missouri Department of Natural Resources Web site.

Data Requirements

Missouri Department of Natural Resources staff follow certain data quality and quantity requirements in preparing the 303(d) list, which is the foundation for the TMDL establishment process. The U.S. Environmental Protection Agency (EPA) has instituted and requested that states use a data quality coding system for classifying water quality data. The code is a single-digit number from one to four, indicating the degree of assurance the user has in the accuracy of a particular piece of environmental data. Level 1 indicates the least assurance and Level 4 the greatest. Based on the 1995 EPA guidance, the department has assigned a quality code to all data reviewed in the following manner.

Level 1: Small amounts of chemical data of demonstrated quality, qualitative sampling of invertebrates or fish, visual observation of streams. This includes university and agencies' data as well as data reported by volunteers that have successfully demonstrated adequate quality assurance at a state-sponsored quality assurance

workshop. In Missouri, the primary purpose of Level 1 data is to provide a rapid and inexpensive method of screening large numbers of water bodies for obvious water quality problems and to determine where more intensive monitoring is needed.

Level 2: Larger amounts of chemical data of demonstrated quality, generally sufficient to characterize typical water quality. This would include sites with 20-50 chemical analyses and intensive studies that monitor several nearby sites repeatedly over short periods of time by fish tissue analysis.

Level 3: Large amounts of chemical data of demonstrated quality extending over many years and providing data on a wide variety of water quality constituents including heavy metals and pesticides. Biological studies for at least one major component of the aquatic flora and fauna (fish, invertebrates or algae) include toxicity tests.

Level 4: Biological studies of two or more major components of the aquatic flora and fauna.

In the preparation of the state 305(b) submission, data from all four data quality levels are used. Most of the data is of Level 1 quality, and without Level 1 data, staff would not be able to assess a majority of the state's waters.

In selecting water bodies for the 303(d) list, only Level 2 or higher data are used, unless the problem can be accurately characterized by Level 1 data. This is because Level 2 data provides a higher level of assurance that a water quality standard is actually being exceeded and that a TMDL study is necessary. All water bodies appearing in the 305(b) report but excluded from the 303(d) list due to inadequate data receive high priority for additional monitoring so that data quality is upgraded to at least Level 2. The schedule for this monitoring is found in Appendix D of Missouri's 2000 Strategy Document.

It should be noted that data collected by volunteers trained by department staff has a quality code rating of Level 1 if the volunteer has attained a volunteer quality assurance/quality control rating of 2 or 3. Otherwise their data does not receive an EPA quality code. All volunteer data is maintained in a unique database. Volunteers with a level 2 or 3 quality assurance/quality control rating that monitor a specific site have results summarized in the database. During 1998-1999, 51 quality assured volunteers submitted monitoring data from 117 sites to department and their data was used in the 305(b) report.

Priority Criteria

All waters on the 303(d) list are assigned a priority ranking of high, medium or low. This ranking takes into account the severity of the pollution and the uses to be made of such waters. Missouri's strategy for determining priority rankings follows these guidelines:

Actual impairments rank high or medium; threatened impairments rank medium or low, and impairments that are not well documented usually rank low.

Actual impairments related to human health are ranked high, for example pesticides or metals in drinking water supply or contaminants in fish.

Waters with multiple use impairments are ranked high.

The degree of treatability of the impaired water is used to differentiate high and medium priorities with actual impairments and between medium and low priorities for threatened impairments. Some water quality problems are more amenable to being successfully treated than are others. In addition, some problems are inherently more expensive to treat than others and some problems have economic impacts only at a very local scale while others will affect regional economies. Last, some water quality problems can be treated with economic consequences only, but for others there will also be environmental trade-offs. For an update refer to the 303(d).

In terms of the number of beneficial uses impaired, all classified waters in Missouri are protected for at least three beneficial uses: livestock and wildlife watering, protection of aquatic life and human consumption of fish. In addition, some waters are protected for other uses, including drinking water supply, irrigation, cold water fisheries and whole body contact recreation (swimming, water skiing).

Total Maximum Daily Load: "Pollution Budget" for Point and Nonpoint Sources

Missouri is in the process of developing Total Maximum Daily Loads (TMDLs) for water bodies impaired by nonpoint sources as well as point sources of pollution. A TMDL includes what is sometimes referred to as a "pollution budget." Pollution reductions called for by the TMDL calculation are designed to meet an acceptable level of pollutant load that will allow beneficial uses, such as swimming and fishing. In 1999, the U.S. Environmental Protection Agency (EPA) proposed revisions to existing regulations for administering the TMDL provisions of the Clean Water Act. These revisions, initially scheduled go into effect October 2001, will take effect pending final approval by EPA.

The National Pollutant Discharge Elimination System (NPDES) has been the primary focus of water pollution control efforts in the past and has done much to improve water quality throughout the nation. NPDES establishes effluent limits for point sources, such as industries and municipal wastewater treatment plants. Control through required effluent limits is called the technology-based method of water pollution control. The future planning process now underway will be making the transition to water quality-based controls and the implementation of these on a watershed basis. The TMDL process is an important element of the water quality-based approach to watershed management.

Most impaired waters in the state do not currently have a TMDL (Total Maximum Daily Load) completed. As permits on impaired water bodies are reissued or new facilities are permitted, a re-opener clause is included. This re-opener clause allows the permit to be revisited once a TMDL is finalized for the receiving stream. Permit limits will be changed to reflect the load capacity and allocations calculated in the TMDL. If the permit will be expiring soon, the new limits will be added at that time. If the facility's permit will not be expiring in the near future, the permit will be reopened before it expires and the limit(s) added.

Total Maximum Daily Load (TMDL) Strategy

The strategy for bringing 303(d) listed waters back into compliance with Missouri Water Quality Standards is to develop and implement a TMDL. This will also ensure that recognized beneficial uses of the water are fully supported. A TMDL systematically identifies the contaminant of concern and all contributing sources, links the data to watershed characteristics, calculates a load capacity for the pollutant, provides a plan for reducing the loading of the pollutant and provides recommendations on implementing the plan. This provides a mechanism for addressing nonpoint source as well as point sources of pollution. Section II of the TMDL strategy document details the strategies and schedules for TMDL development for each type of impairment, such as acid mine drainage and nutrients. The TMDL Strategy Document will be revised at least every four years.

Sections of a TMDL document

1. **Description of Water body, Pollutant of Concern, Pollutant Sources and Priority Ranking**

   The TMDL must include a description of the point, nonpoint and natural background sources of the pollutant of concern, including the magnitude and location of the sources. It should also contain a description of any important assumptions, such as land use, population characteristics and wildlife resources, and present and future growth trends where applicable.

2. **Description of the Applicable Water Quality Standards and Numeric Water Quality Target**

   All TMDLs are based on Missouri's WQS. The standards being violated are specifically identified in this section. If the impairment is based on language in the general criteria, rather than numeric water quality criterion, a description of the process used to derive the TMDL numeric target must be included. Missouri's anti-degradation policy is also included in this section.

3. **Loading Capacity (LC)– Linking Water Quality and Pollutant Sources**

   EPA regulations define loading capacity as the greatest amount of pollutant load that water can receive without violating Water Quality Standards. The allowable pollutant load is equivalent to the sum of waste-load allocations for point sources, load allocations for nonpoint sources, a margin of safety and allowances for future growth. These allocations are determined mathematically and often use computer models. Using instream water chemistry data and watershed characteristics, the planning section of the Water Pollution Control Program uses hydrologic and chemical computer models to calculate pollutant loads for a particular water. A margin of safety in calculating loads for a particular water accounts for the uncertainties in scientific and technical understanding of water quality in natural systems. The safety margin is intended to account for these uncertainties in a conservative manner. Using the highest quality and quantity of data available, an appropriate hydrologic/chemical model and best professional judgment of parameters and assumptions, we can effectively model most hydrologic systems. The Water Resources Program has provided ongoing hydrological engineering support for TMDL modeling. The results of all calculations are part of the

TMDL. The document must also describe the rationale for the analytical method used to establish the cause and effect relationship between the numeric target and the identified pollutant sources. Supporting documentation for the analysis will also be included or, when it is impractical to include all the data, made available on request.

4. Load Allocations (LAs) - nonpoint sources

Load allocations identify the portion of the load capacity allocated for nonpoint sources and the naturally occurring background levels that may exist. The TMDL may recommend a zero load allocation if the state determines that no nonpoint sources are impacting the impaired water segment.

5. Waste-load Allocations (WLAs)-point sources

Waste-load allocations identify the portion of the load capacity allocated to point sources. The waste-load allocation can be zero if there are no point sources contributing to the impairment.

6. Margin of Safety (MOS)

The regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning variables or uncertainty in the system. An example would be a lack of understanding of the changes in the pollutant or the load over space and time. The margin of safety may be implicit (i.e. incorporated into the TMDL through conservative assumptions in the analysis) or explicit (i.e. expressed as loading set-asides for the margin of safety).

7. Seasonal Variations

Seasonal variation must be accounted for and the method chosen for determining that seasonal variation must be described. Some impairments are altered greatly by temperature and flow.

8. Monitoring Plan for TMDLs Developed Under the Phased Approach

The phased approach is appropriate when a TMDL involves both point and nonpoint sources or where inadequate data has been collected to address all aspects of the watershed. EPA regulations provide that load allocations for nonpoint sources and/or natural background are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments. With the phased approach, the TMDL includes a description of the implementation mechanisms and the schedule for the implementation of source control measures. TMDLs also need to provide assurances that source control measures will achieve the desired load reductions. The TMDL should include a monitoring plan with a schedule for reassessing TMDL waters to determine if the load reductions lead to attainment of Water Quality Standards. Uncertainties that cannot be quantified may also exist for certain pollutants discharged primarily by point sources. In such situations a large margin of safety and follow-up monitoring would be fitting.

Adequate monitoring in TMDL planning includes identifying pollutants of concern, setting values for modeling, tracking implementation of best management practices or other controls, including water quality improvements, and data that reflects progress

toward meeting Water Quality Standards. Methods and data analysis must follow established conventions, be technically sound and include quality assurance and quality control. Measurable monitoring indicators for TMDL goals and objectives are delineated when the monitoring program is implemented. All of these actions are essential to effective TMDL implementation.

9. Implementation Plans

Implementation is a necessary part of a TMDL. The goals and compliance schedule of the implementation plan will guide the initiation of monitoring and determine data parameters that will be used to evaluate the effectiveness of a TMDL. Monitoring evaluates not only the immediate results of implementing various management approaches but also addresses the longer-range issue of whether or not the Water Quality Standards and associated beneficial use support have been attained or are likely to be attained given documented trends in watershed condition. If Water Quality Standards are not met after implementation, the TMDL will be reopened and re-evaluated. The EPA does not mandate this section, but Missouri has always included implementation. Actions taken can include collecting more data, adjusting effluent limits in permits and instigating additional implementation plans.

Under the Clean Water Act, point sources implement the waste-load allocations through enforceable water-quality-based discharge limits in NPDES permits. Nonpoint sources implement the load allocations within TMDLs through a wide variety of local, state and federal programs.

An acceptable nonpoint source TMDL water quality management plan must be comprehensive and objective-driven. It should reflect the knowledge gained from the TMDL calculations using creditable data. Watershed plans to enhance stream conditions can take many forms in response to the local situation. Specific management practices and objectives are selected to meet the local need. All contributors to the pollutant load should have an opportunity to participate in this process. Identification of applicable best management practices, adequate funding and the voluntary participation of local landowners and managers are essential for implementation.

10. Reasonable Assurances

In order to allocate loads among both nonpoint and point sources, there should be reasonable assurances from those involved that source reductions will in fact be achieved. Examples would include identification of funding sources for implementation or watershed management plans signed by point and nonpoint sources, indicating they are in agreement with the implementation strategy.

11. Public Participation

EPA policy is that there must be full and meaningful public participation in the TMDL development process. Public cooperation is necessary for TMDLs that involve nonpoint source pollution. Public meetings and availability sessions will be held throughout TMDL development so that all stakeholders in an affected watershed can participate in finding and implementing solutions.

All TMDLs have a 30-day public notice period before being finalized. This 30-day period provides an opportunity for the public to comment on draft TMDLs. Public notice announcements are sent to the Missouri Clean Water Commission, appropriate state legislators, the permitted facilities, the Water Quality Coordinating Committee, the TMDL Policy Advisory Committee, local watershed associations, Stream Team volunteers in the watershed and others that routinely receive the public notice of NPDES permits. They are also posted on the department's Web site. All comments received will be considered and answered. The TMDL will be adjusted, if necessary, before it is resubmitted to the EPA for final approval.

11. Administrative Record

A docket is maintained for each impaired water body to document the TMDL process.

Permit Review in 303(d) Waters

TMDL staff review all staff operating permits that may impact an impaired stream. A 303(d) re-opener clause is being added to all permits upstream of or within an impaired segment. Where a TMDL is completed without any pending permit application, all permits in that watershed are reviewed to make sure they are consistent with the TMDL. These actions may be accomplished by proposing all modifications needed within a given watershed simultaneously, or revoking and reissuing the permits so they share the same expiration date in order that future actions can be more easily accomplished on a watershed wide basis. Based on specific circumstances, modifications to the permits can be made as they normally expire. If facility upgrades or new construction is required to meet more restrictive permit limits, compliance schedules will be identified.

Effluent Limitation Requirements

Development of a water-quality-based effluent limit for point sources must be consistent with the assumptions and requirements of the Waste load allocation and TMDL for the particular pollutant. Waste load allocations and TMDLs are to be established at levels necessary to attain and maintain the applicable narrative and numeric water quality criteria. This evaluation requires a certain minimum level of information be provided to assure that the allocation is both reasonable and protective of Water Quality Standards within the acceptable level of uncertainty.

U.S. Environmental Protection Agency (EPA) Guidance

The EPA publishes numerous guidance documents to assist in the writing of TMDLs. In addition, EPA Region 7 works closely with department staff during TMDL development, offering their advice and expertise to achieve a TMDL that is effective and that fulfills all regulations and requirements. A TMDL is considered final only after the EPA has approved it. If a TMDL does not get approval or if Missouri is unwilling or unable to complete one, by law the EPA undertakes the task of developing the TMDL. Missouri will follow the EPA guidance for selection of management measures to achieve load allocations.

Cross-jurisdictional TMDL Waters

Cross-jurisdictional TMDL water bodies are those that flow along or across political (state) lines. These water bodies pose complex problems and Missouri shares several of them with neighboring states. The EPA is vital in providing assistance and information on the standards, designated uses and listing of water body impairments by these neighboring states. Shared information will contribute to effective TMDL development and implementation. Missouri is developing TMDLs based in part on other states' listing of specific chemical and biological impairments.

TMDL planning for waters being impacted by other states is being developed in ongoing meetings with the Kansas Department of Health and Environment concerning the Spring River Basin as Missouri has two tributaries to the Spring River on its 303(d) list. Missouri is also working with Arkansas regarding the White River Basin and Oklahoma for the Elk River Basin. Future meetings will be scheduled with the other adjoining states where TMDLs must be developed for waters flowing along or across state boundaries.

The EPA is involved in coordinating TMDL development on the largest of Missouri rivers, the Missouri and the Mississippi. Missouri lists these big rivers for habitat impairment, but there is controversy over the use of habitat impairment for 303(d) listing. Other states list many other diverse impairments for these two rivers.

Water Quality Planning

In the mid-1970s, Missouri began requiring studies to predict point source effluent limits necessary to protect in-stream Water Quality Standards. These studies were referred to as Waste Load Allocation Studies, and for a number of years Missouri limited TMDL evaluations to consideration of these studies. Currently, nonpoint sources are considered within the context of TMDL development strategies and are included in Missouri basin plans. Basin planning considers TMDLs as part of the basin discussions for point and nonpoint source projects. Basin plans are being made available on the department's web site. Input into the basin planning effort may be accomplished through participation in the Water Quality Coordinating Committee Meetings open to the public on the third Thursday of the month. The Missouri basin plans, which are the updates of the water quality management plans, identify water quality problems including impaired waters. The basin plans are updated periodically; the updating of the entire set of plans cycles through revisions about every seven years.

Developing a comprehensive database is a useful management tool for TMDL development. Current data tables, monitoring plans and impairment lists and schedules will be continuously consolidated and normalized to ensure all information is readily available. The goal is to post TMDL information on the web in a geographic information system (GIS) format so it will be accessible to all TMDL staff and the public. As the database is built, TMDL development will advance. TMDL development for all 1998 303(d) listed waters is scheduled for completion in 2009.

Determining the methods and models best suited to calculate load and waste load allocations for each water body or impairment is currently in process. Training of staff in the use of the methods and models used and adopted for TMDL development is ongoing.

2001 Status

At this point in the Continuing Planning Process, over 24 TMDLs in 14 water body segments have been submitted by the state and approved by the U.S. Environmental Protection Agency. TMDLs were done according to the 1998 priority ranking criteria. Changes were made to the priority ranking criteria in the 2000 strategy document approved by the Clean Water Commission.

References

- Revisions for Water Quality Planning & Management & Regulated Revisions to NPDES & Support Revisions to Water Quality Planning and Management EPA, (40 CFR Part 9 et al.), July 13, 2000.
- Clean Water Act, Section 303(e).
- Missouri Clean Water Law, Sections 644.141, 644.116: Missouri Department of Natural Resources rules Clean Water Commission, Division 20, Chapter 7, Water Quality Standards.
- Missouri's 2000 Strategy Document and the 2002 303(d)Listing Methodology and most recent documents http://www.dnr.state.mo.us/deq/wpcp/wpc-tmdl.htm.
- Methodology for the Development of the 2002 Section 303(d) List in Missouri http://www.dnr.state.mo.us/deq/wpcp/wpc-tmdl.htm included in section II, in the Methodology Document, are the 303(d) Listing considerations; adding to the list, deleting from the list, placement of waters within categories, prioritization of waters for TMDL development and resolution of interstate and international disagreements.
- *Protocol for Developing Nutrient TMDLs*, NOV.1999, EPA #841-B-99007; *Protocol for Developing Sediment TMDLs*; October 1999, EPA #841-B-99004 - http://www.epa.gov./owow/tmdl/proprule.html, and Draft Guidance for Water Quality-based Decisions/*The TMDL Process* (second edition).
- *Protocol for Developing Pathogen TMDLs*, EPA #841-R-00-002, January 2001. This draft guidance provides guidance to states and to the public and the regulated community on how EPA intends to implement section 303(d) and its regulations regarding lists of impaired water bodies and TMDLs, August 1999, EPA #841-D-99-001.
- *Watershed Protection*, A Statewide Approach, 1995a, EPA #841-R-95-001.
- *Watershed Protection*, A Project Focus, 1995b EPA #841-R-95003.
- New Policies for establishing and implementing Total Maximum Daily Loads, 1997a, is located at http://www.epa.gov/owow/tmdl/policy.html.
- See TMDL web at http://www.dnr.state.mo.us/deq/wpcp/wpc-tmdl.htm for the department and EPAs Memorandum of Understanding and other information
- EPA accepts public comments electronically. Comments should be sent tmdl@epa.gov during relevant comment periods. No confidential business information should be sent via e-mail.